

UNITED STATES DISTRICT COURT  
DISTRICT OF MASSACHUSETTS

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ROBERT O'SHEA, CHAIRMAN OF THE )  
WARD 6 DEMOCRATIC COMMITTEE, et )  
al., )  
Plaintiffs, ) Civil Action No. 1:22-cv-12048-PBS  
v. )  
BOSTON CITY COUNCIL, )  
Defendants. )  
\_\_\_\_\_  
)

**AFFIDAVIT OF MOON DUCHIN**

I, Moon Duchin, on oath hereby do depose and say as follows:

1. I am a Professor of Mathematics, and a Senior Fellow in the Jonathan M. Tisch College of Civic Life, at Tufts University. At Tisch College, I am the director and principal investigator of an interdisciplinary research group called the MGGG Redistricting Lab. My areas of research and teaching include the structure of census data, computational redistricting, and the mathematical study of elections. In 2019, I was awarded a major grant from the National Science Foundation to study *Network Science of Census Data*.

2. I am compensated at \$400/hour for my work in this case. I have previously written reports and provided testimony by deposition, at hearings, and at trial in redistricting cases in North Carolina, Pennsylvania, Wisconsin, Alabama, South Carolina, Texas, and Georgia.<sup>1</sup> All work in this report was completed by me and by research assistants working under my direct supervision.

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<sup>1</sup> NC League of Conservation Voters, et al. v. Hall, et al. No. 21-cvs-500085 (Wake Cty. Sup. Ct. 2021); Carter v. Chapman, No. 7 MM 2022, 2022 WL 702894 (Pa. Mar. 9, 2022); Johnson v. Wis. Elections Comm'n, No. 2021AP1450- OA, 2022 WL 621082 (Wis. Mar. 3, 2022); Milligan, et al. v. Merrill, et al., Case No. 2:21-cv-01530-AMM and Thomas, et al. v. Merrill, et al., Case No. 2:21-cv-01531-AMM (N.D. Ala. 2021); S.C. NAACP et al. v. Alexander; et al., Case No. 3- 21-cv-03302-MBS-TJH-RMG (D.S.C. 2022) (three-judge ct.); TX NAACP et al. v. Abbott, Case No. 1:21-CV-00943-RP-JES-JVB.

3. I have been provided by counsel with the following documents and materials.

- **PI Memo** (Plaintiffs' Supplemental Memorandum in Support of Application for Preliminary Injunction), dated November 2, 2022
- **Amended Complaint**, dated November 21, 2022
- **Handley Report** (Lisa Handley Analysis, Exhibit D of City of Boston Goldberg Affidavit), dated January 13, 2023
- **City of Boston Opposition**, dated January 17, 2023
- **Plaintiffs' Reply** (Plaintiffs' Reply to the Defendant's Opposition to Plaintiffs' Motion for Preliminary Injunction), dated January 27, 2023
- Shapefiles showing the legally enacted districts from before and after the 2022 redistricting process (called the **Benchmark Plan** and the **2022 Enacted Plan**, or simply Enacted Plan, respectively)

4. I have also relied upon publicly available data from the U.S. Census Bureau, particularly the PL94-171 release known as the Redistricting Data, and referred to below as 2020 Census data.

### **Background Facts**

5. According to the 2020 Census data, the population of the City of Boston is 675,647. The City Council has 13 members, of whom 9 are elected from geographical districts.

6. In Fall 2022, the Council undertook its decennial redistricting. Besides the usual challenge of balancing population in districts that had grown malapportioned over time, a second challenge faced the Council: the city had just conducted an adjustment of its precincts for the first time in over 100 years. Since the districts are made of whole precincts, this also prevented districts from staying exactly as before.

7. In addition to equalizing population and using whole-precinct building blocks, the Council had to balance a number of other traditional districting principles, or "TDPs," including contiguity (connected land area) and compactness (reasonable shapes). Many consider core retention (preserving the district assignment of most voters) and related incumbency considerations to also merit inclusion among TDPs. Rounding these out are two TDPs that are more complicated to quantify: respect for "communities of interest and the safeguarding of

electoral opportunity for members of minority groups, as articulated in the Voting Rights Act of 1965 and in racial gerrymandering jurisprudence drawn from the 14th Amendment.

8. The complaint in this case claims in part that race predominated over these traditional principles: "This Redistricting Plan was motivated by a desire to achieve 'racial balancing' between various Districts in the City of Boston. Primarily, the goal was to make white-majority districts less white, and African-American majority districts less black" (PI Memo, p. 1). The complaint alleges that the pursuit of these priorities led to "aggressive redistricting of boundaries along racial lines" (Amended Complaint, p. 20). In addition to the constitutional claim, Plaintiffs contend for VRA purposes that "any reduction in the black vote in District 4 is catastrophic to the only black-majority district in the City, especially when viewed in historical context" (Plaintiffs' Reply, p. 2).

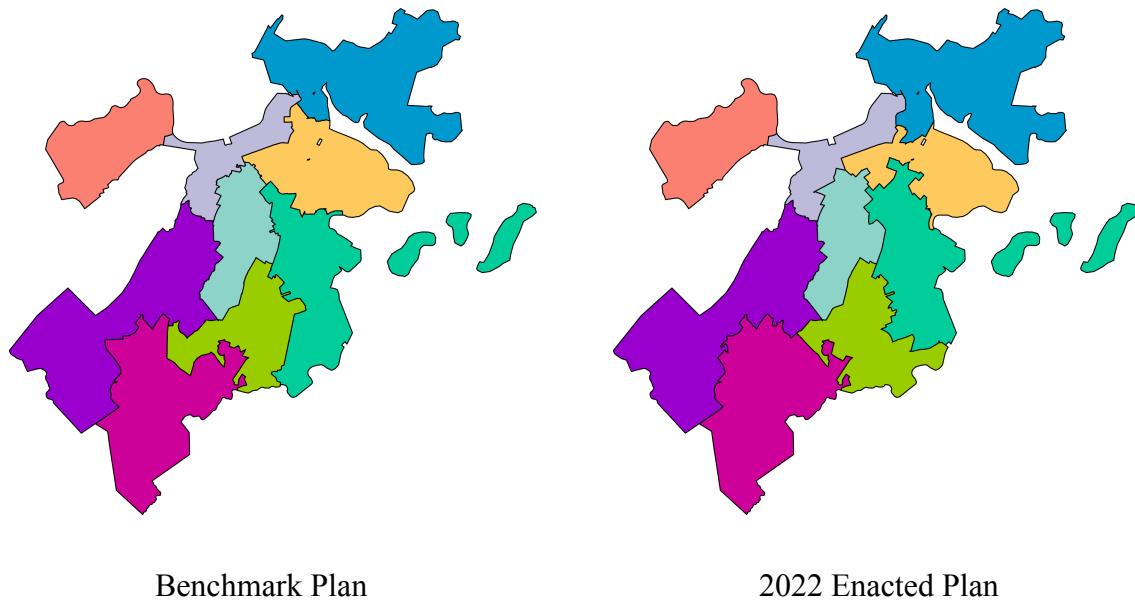


Figure 1: Of 675,647 Boston residents, the vast majority—626,100 people—will have the same geographical district assignment after redistricting that they did before. This is a remarkably high degree of *core retention*. In particular, 85.2% of the Bostonians who were assigned to District 3 before the redistricting are retained in the district.

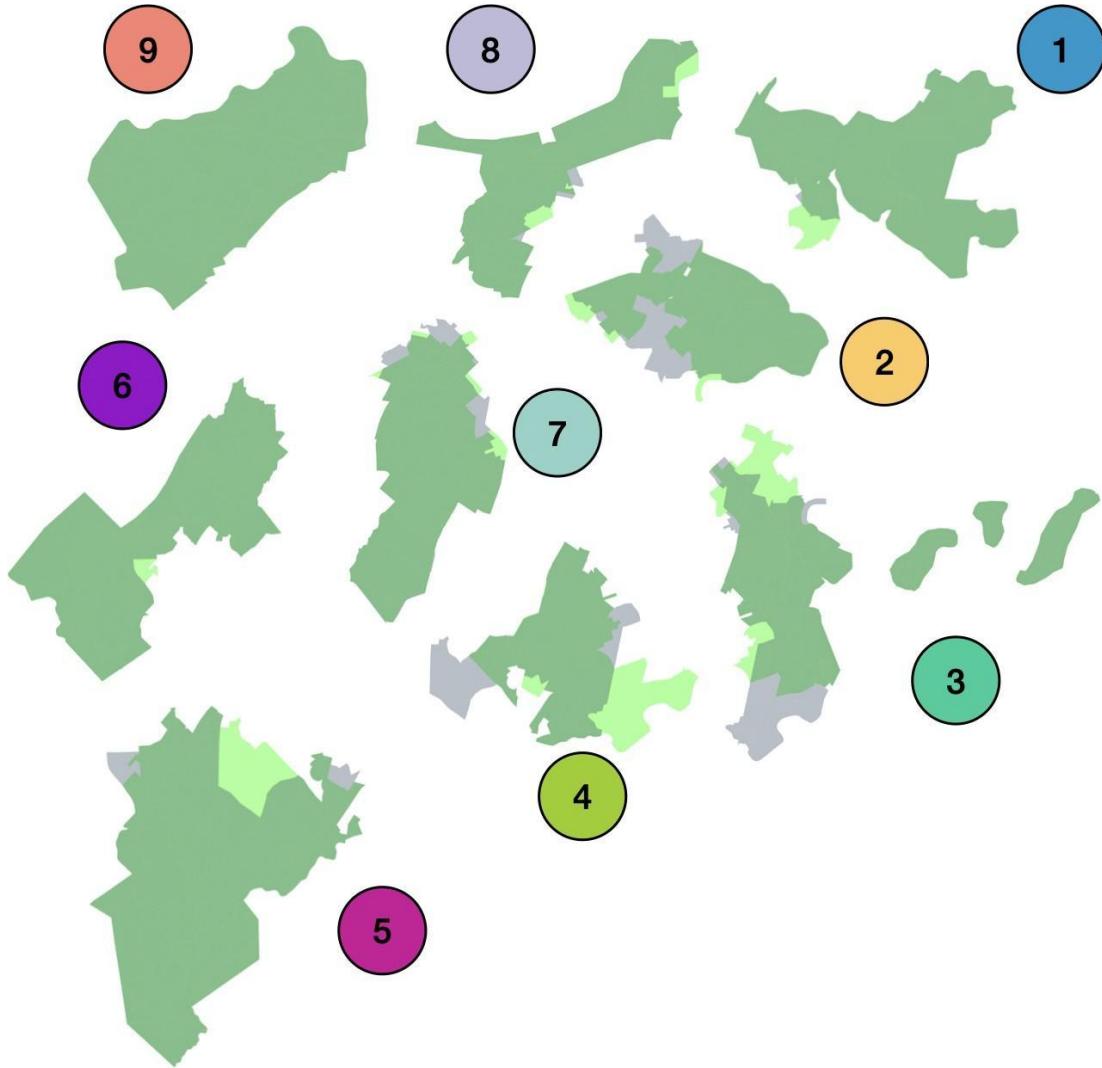


Figure 2: Before-and-after images are shown for each district. Pre-redistricting (“benchmark”) configurations are shown in gray and post-redistricting (“enacted”) configurations are shown in light green, so that the dark green regions represent the overlap. For instance, the figure suggests that District 2 had become overpopulated, and needed to shrink, while District 1 had become slightly underpopulated, and needed to grow. As this figure illustrates, the districts must fit together like a jigsaw puzzle, with changes to one district interacting with changes to neighboring districts.

### **Voting Rights Act Claim**

9. The Voting Rights Act claim is put forward on behalf of Black voters in District 4:

There can be no doubt that District Four contains a minority group (African-Americans) that is sufficiently large and compact to constitute a majority in the District. The Redistricting Plan

approved by the City Council effective splits District Four, transferring African-American votes out of the district and receiving primarily white votes in return. This “cracking” of a historically African-American district will result in the dilution of the African-American vote in that District and critically endanger the opportunity to elect the minority’s preferred representative. (PI Memo, pp. 4-5)

10. The mention of Black population being "sufficiently large and compact" to be a majority is a reference to Gingles 1, the first of the three so-called “Gingles factors” that are preconditions for advancing VRA litigation. The other two required showings, known as Gingles 2 and 3, call for demonstrations of racially polarized voting. The minority group must be shown through statistical inference techniques to have a cohesive preference for particular candidates (Gingles 2), while the majority must be shown to vote as a bloc in a manner that usually defeats these preferred candidates (Gingles 3). But far from establishing these conditions, the Amended Complaint makes it clear that plaintiffs deny that evidence of racially polarized voting exists at all.

There has been no racial polarization regarding voting in the City, as was confirmed by Professor Wice, as can be seen from Councilor Baker’s re-election in his 63% non- white district, in the election of Secretary Galvin in the African-American majority of District 4, and in various other elections throughout the City. (Amended Complaint, ¶ 121)

Under the existing plan before redistricting, District 3 had a long history of electing African-American officials, and District 4 had a long history of electing white officials. There was no racial polarization of voting blocs in either district that would require redistricting based on race. (¶¶ 161-162)

There is no evidence in the record of racial polarization of votes in the City of Boston or in the affected districts. (¶ 173)

The Districts most affected by the redistricting legislation each have long histories of race-neutral elections, with white candidates winning elections in majority minority districts and minority candidates winning in majority white districts and precincts. (¶ 175)

11. Since the 1980s, these Gingles factors have been a fundamental precondition for advancing VRA claims, because they provide an indicator that the challenged configuration of districts creates a harm to minority voters that can be remedied with alternative district lines. Once the preconditions are met, liability is established by conducting a fuller *performance analysis* of districts, considering whether they provide effective opportunity for the minority group to elect candidates of choice.

12. The Council received information relevant to district performance from two different experts: myself and Dr. Lisa Handley. I was brought in to address the City Council Working Session on October 21, 2022 in my capacity as a local professor with domain expertise. Dr. Handley, as a consultant working for the City of Boston, addressed the City Council Working Session on October 25, 2022, and later provided a written report on her findings. Dr. Handley and I each independently concluded that the proposed District 4 map would not undermine the ability of Black voters in District 4 to elect candidates of their choice.

13. We each drew these conclusions from recent elections in which standard inference methods identify clear candidates of choice for Black voters. I offered the examples of Ayanna Pressley in the At-Large City Council elections of 2015 and 2017 as well as Kim Janey and Andrea Campbell in the Mayoral Primary of 2021. Handley also cited Janey and Campbell in the Mayoral Primary of 2021 as candidates of choice and described that election as “a good bellwether” (Handley Report, Goldberg p. 63).

14. Once contests have been identified that are probative of the preferences of the minority group, the test of effective opportunity is to see whether these candidates would have won their contest in the districts under consideration. This is sometimes called a “reconstituted” or “recompiled” election analysis.

15. To study this, I used standard techniques in spatial statistics to transfer election results from 2015-2021 onto the new districts.<sup>2</sup> I find that the candidate of choice wins handily in all three identified elections, as shown in Table 3.

	At-Large Council 2015	At-Large Council 2017	Mayoral Primary 2021
Benchmark 4	Pressley 5312	Pressley 7072	Janey 4073
	Wu 3272	Wu 4997	Campbell 3212
	Flaherty 3042	Flaherty 4046	Wu 1855
Enacted 4	Pressley 5417	Pressley 7544	Janey 4108
	Flaherty 3452	Wu 5452	Campbell 3083
	Wu 3319	Flaherty 5025	Essaibi George 2061

Table 3: The minor changes to District 4 in the 2022 redistricting process leave the performance analysis substantively unchanged—there are commanding showings by Black voters’ candidates of choice each time.

16. Dr. Handley agrees:

***Recompiled Bellwether Election Results for Proposed Plan*** An examination of [a table of results] indicates that proposed Districts 4 and 7 will continue to provide Black voters with an opportunity to elect their candidate of choice. The percentage of votes garnered by Janey declines slightly in District 4 and increases more substantially in District 7 compared to the Current Plan, but Janey easily carries both districts. The result for District 5 in the Proposed Plan is comparable to the Current Plan: Wu receives slightly more votes than Janey. Overall, Black voters’ candidate of choice, Janey, wins two districts and comes in a very close second place in a third district. This is precisely the same overall electoral outcome as under the Current Plan.

17. In my view, this directly contradicts the plaintiffs’ claim that the new configuration of District 4 will “critically endanger the opportunity to elect the minority’s preferred representative.” (PI Memo, pp. 4-5)

18. In summary, as regards the Voting Rights Act challenge, the precondition showing

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<sup>2</sup> In particular, I used the MAUP package developed in my Lab to disaggregate election results to 2020 census blocks proportional to voting age population in each block. See <http://github.com/mggg/maup>. Prorating from precincts to blocks can produce fractional vote totals, but I have reported the totals rounded to the nearest whole number.

racially polarized voting has not been met by plaintiffs (who in fact deny that polarization exists); and performance analysis independently offered by two experts shows that enacted District 4 is in any case highly effective at providing electoral opportunity for Black voters to elect candidates of choice.

### **Equal Protection Claim**

19. In the PI Memo, plaintiffs cite *Miller v. Johnson* (1995) to explain what must be demonstrated in a racial gerrymandering claim:

To make this showing, a plaintiff must prove that the legislature subordinated traditional race-neutral districting principles, including but not limited to compactness, contiguity, and respect for political subdivisions or communities defined by actual shared interests, to racial considerations. (PI Memo, p. 6)

In this instance, such a demonstration would be extremely difficult given the plan's great degree of consideration for traditional principles: not only respect for compactness and contiguity, but also a level of deference to prior district boundaries (i.e., extremely high core retention) that may be the highest I have seen in any redistricting plan in the country.

20. The plaintiffs write that “the Redistricting Plan **eviscerates** the neighborhoods in Districts 2, 3, and 4” (PI Memo p. 6-7, emph. added) and that “There is a **complete disruption** of District 3, by **removing the core** of its district from its historical home” (Amended Complaint ¶110, emph. added). These claims are completely inconsistent with the plan’s core retention levels of 80.5%, 85.2%, and 88.0% in Districts 2, 3, and 4, respectively. Indeed, the district that lost the highest number of prior residents, District 2, had no choice but to slim down as it had become severely overpopulated due to population shifts since the last Census.

21. Finally, I will briefly address the comments attributed to individual City Councilors in the Plaintiffs’ Reply, which are presented as evidence of racial predominance in decision-making. Plaintiffs cite thirteen informal remarks made in Working Sessions dated

September 30 to October 20, 2022.

22. Most of the comments are fairly vague but indicate that the Councilors had the impression that VRA compliance might require tuning of racial demographics. For instance, the most explicitly race-oriented of the comments cited by Plaintiffs is this one:

Councilor Breadon stated: “Both District 5 and District 3 are opportunity districts, and we need to ensure that they continue to be opportunity districts and strengthen them.” Councilor Baker responded: “And so opportunity being 60% of non-white?” Councilor Breadon responded: “60% of non-white or ideally pushing it up higher than that up to 65.” Council Baker queried: “Ideally, as a political aspiration?” Councilor Breadon responded: “Yes.” (at 1:09:07) (October 17, 2022, cited in Plaintiffs’ Reply, p. 5)

That is, at the time of this comment, the speaker appears to have believed that racial demographics are directly germane to an opportunity analysis. However, this comment precedes the presentations to the Council by myself and Dr. Handley, which emphasized that electoral history, not racial percentages, is at the heart of a performance analysis: I made this point myself on October 21; and Dr. Handley made entirely consonant remarks on October 25. Thus, any mistaken impression would have been corrected before final decisions were made. As an indication of that, note that District 3 was enacted with a non-White voting age population share of 58.1%—actually *reduced* from the benchmark level of 58.5%—which makes it clear that a target of 60-65% discussed briefly at the October 17 meeting was not ultimately influential in the choice of district lines.

23. In summary, the changes made from the benchmark to the enacted plan are nearly mathematically minimal, and the plan reflects a strong deference to traditional districting principles. The cited discussion of racial demographics by individual Councilors does not seem to be reflected in the final design of the plan.

Signed under the pains and penalties of perjury this 21st day of February, 2023.



Moon Duchin